

REMARKS

Applicants have carefully reviewed the final Office Action of April 13, 2009 and the Examiner's comments have been carefully considered. Reconsideration of the rejection of the claims is respectfully respected.

The pending claims are claims 14, 17, 20 and 22-24. Dependent claim 21 is cancelled without prejudice. Dependent claim 25 has been added and depends on claim 14. A total of 7 claims remain in the case.

Independent claim 14 is amended to characterize "fixed part" as being the first pipe member; to characterize "movable part" as being the second pipe member; and to characterize the friction element as being a compression shoe. Additionally claim 14 has been amended to further define that the compression generator is used to connect two pipes. Claim 20 is amended to characterize "friction element" as being the compression shoe. Claim 22 is amended to depend on claim 14 and to define the pipe member as being the first pipe member. Claim 23 is amended for consistency with the amendments made to claim 14 and to include a period at the end of the claim. Claim 24 is amended to depend on claim 23 which contains the proper antecedent basis for the recitations made in claim 24 and to further define that the internal cavity exists in the first pipe member. New claim 25 recites that the first pipe member has four threaded apertures arranged as opposed pairs with the axes of a pair being coaxially arranged and that a threaded carrier with jack bolts is secured in each of the four threaded apertures.

The Invention

The invention relates to a compression generator for securing two pipes together in an end to end relationship for creating a high security joint between the pipes to resist the stress and strain encountered in sub-sea environments, for example, commonly encountered in the offshore petrochemical industry as disclosed on page 1 of the specification of the patent application.

Claims 14, 17, 20 and 22-25 pertain to the embodiment of Figure 1. Thus, the compression generator of Figure 1 uses jack bolts 38 to apply a mechanical load against compression shoe 32 for forming a mechanical connection between first pipe 14 and second pipe 12. Jack bolts 38 are threadedly engaged in carrier 32 which carrier, in turn is threadedly engaged in the first pipe 14. Several carriers 32 with jack bolts 38 are located around the peripheral surface of first pipe 14 as shown in Figure 1. Jack bolts 38 have an end portion abutting a compression shoe 32 which includes an arcuate base 36 containing compression ribs 39 (Figure 4) for establishing interlocking engagement with annular support ring section 18 and annular grooves 20 and 22 (Figure 1).

Compression shoe 32 pressing against support ring section 18 by the pushing force generated by jack bolts 38 establishes a mechanical interconnection between pipes 12 and 14. Positioning of compression shoe 32 before generating the pushing forces by jack bolts 38 is limited to linear movement by sliding spindle 42 in bore 32B along axis 30A while joined by a T-shaped end 44 mounted in a corresponding shaped T-slot formed in compression shoe 32. Nut 46 is mounted on the threaded end of spindle 42 and seats in counter bore 32C (Figures 2 and 4) to provide guided movement of spindle

42 throughout a desired range in an annular gap between ends portion 16 and connector portion 28 (Figure 1).

Information Disclosure Statement

A supplemental information disclosure statement for presenting the foreign patent documents GB 2 340 571A and EP 0 405 951 A1 is enclosed. This information disclosure statement is being filed by the Applicants in accordance with 37 C.F.R. §1.97 (b) (4).

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. The specification is amended to characterize pipe member 14 as being a fixed part and pipe member 12 as being a movable part. In the pending claims, “friction element” has been replaced with --compression shoe--. Claim 21 is cancelled which recited “mounting surface”. With regard to lines 3-4 of claim 23 and the limitation “and a nut of said spindle to limit linear movement of said compression member”, claim 23 is amended to recite “compression shoe” in place of “compression member”.

In view of these amendments made to the specification and to the claims, Applicants respectfully request that this objection to the specification be withdrawn.

Claim Objections

Claim 23 is objected to because a period should be inserted after “member” on line 4 of claim 23. Appropriate correction is made after the word “shoe”.

In view of this amendment to claim 23, Applicants respectfully request that this objection to the claims be withdrawn.

Claim Rejections under 35 U.S.C. 112

Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 23 is amended to recite “compression shoe” instead of “compression member”. Claim 14 is amended to change “friction element” to read “compression shoe”, thereby providing a proper antecedent basis for the phrase “compression shoe” now appearing in claim 23.

In view of the amendments to claims 14 and 23, Applicants respectfully request that this rejection to the claims be withdrawn.

Claim Rejection under 35 U.S.C. 103

Claims 14, 17 and 20-24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Reimert (US 4,094,539) in view of Tischler (US 6,712, 096).

Reimert U.S. Patent No. 4,094,539 discloses a connector for connecting adjacent pile sections or pipe sections to each other. Box 11 is disposed over pin 14 with the end

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of box 11 engaging a companion pin shoulder. Box 11 is welded to pipe 10 as indicated at 12 and pin 14 is welded to pipe 13 as indicated at 15. Box 11 and pin 14 are secured together by a plurality of lock dogs 16 forced radially within companion grooves in pin 14, the dogs 16 and grooves having coengaging cam surfaces exerting an axial thrust between box 11 and pin 14.

Tischler U.S. Patent No. 6,712, 096 pertains to a high pressure accumulator which includes a body defining a pressure chamber therein. A tensioner ring 42 includes threads on an outer threaded surface which engage mating threads on an inner threaded surface of the engaging wall. Jackbolts 44 threaded through the tensioner ring 42 push against a lateral face of the seal head forcing an engaging face of the seal head into engagement with a wedge surface surrounding the opening to the pressure chamber, thereby sealing the opening to the pressure chamber.

Claims 14, 17, 20 and 22-25 represent the embodiment of Figures 1 through 4 of the instant application.

Applicants draw the Examiner's attention to the first paragraph of page 7 of the final Office Action where the Examiner responds to Applicants' argument. The Examiner's reply is: "In response, the claims do not include any limitations that would preclude applying a prior art reference that is applicable to high pressure fluid systems."

Applicants have now amended independent claim 14 to limit claim 14 to pertain to the connecting of two pipes together in a mechanical connection. As stated, the recited components of claim 14 and dependent claims 17, 20 and 22-25 represent the embodiment of Figures 1 through 4 of the instant application. Additionally, these claims represent the invention in lines 2-5 on page 3 of the instant application which states: "It

is a further object of the present invention to generate a greater and evenly distributed frictional locking for joining pipes in an end-to-end relation in a joint than in previously used technology to produce a joint considerably more resistant to vibrations and axial, radial and sideway directed strains.” It is further appreciated that the specification at page 1 beginning at line 16 through page 2, line 9 of Applicants’ specification describes the problems associated with the prior art for joining two pipes together. Hence, the claimed invention of claims 14, 17, 21 and 22-25 provides an adequate solution to these problems associated with the prior art of mechanically connecting two pipes together. Independent claim 14 positively recites the mechanical connection of two pipes. Thus, the Tischler reference which pertains to a high pressure fluid system should be removed as a reference since claim 14 pertains to securing two pipes together and the claims now include limitations that would preclude applying a prior art reference that is application to high pressure fluid systems.

Applicants further wish to counter argue the Examiner’s position appearing in the “Response to Arguments” section of the final Office Action. Both pipes 12 and 14 of the invention have a central bore or “internal cavity” extending longitudinally and axially within pipes 12 and 14 wherein for the connection of pipe 12 in pipe 14, pipe 12 is positioned within the central bore of pipe 14 and the central bore of pipe 14 is accessible via threaded bores 30 of pipe 14. In the invention, the fixed pipe is pipe 14 and the movable pipe is pipe 12. The friction element 34 is positioned in the central bore or “internal cavity” of fixed pipe 14 when pipes 12 and 14 are connected together. In the

claimed invention of claim 14 the central bore or “internal cavity” of pipe 14 is different than the threaded aperture 30 for supporting the threaded carrier 32.

In Reimert, open space 17 receives dog 16 and is coextensive with the opening where partition 28 is located for receiving screw 27 and the opening for receiving outer head 29 and shank 30. That is, the components for attaching pipe 10 to pipe 13 of Reimert are located in the opening extending through the wall thickness of box 11 of pipe 10. As such, dog 16 of Reimert is not positioned in the central bore or “internal cavity” of a pipe similar to that of the claimed invention of claim 14 as shown in Figure 1 of the instant patent application. Instead, dog 16 of Reimert extends in the clearance made between box 11 of pipe 10 and pin 14 of pipe 13 when box 11 is placed over pin 14 of pipe 13 and dog 16 engages the grooves of pin 14 as shown in Figure 3 of Reimert. Thus the structure of the claimed invention of independent claim 14 is totally different from that of Reimert. Threaded carrier 32 of the present invention extends substantially the length of threaded aperture 30 and into the central bore or “internal cavity” of pipe 14 for abutment of threaded carrier 32 against compression shoe 34 located in the central bore or “internal cavity” of pipe 14. Thus, it is apparent that the structure and arrangement of the components of the claimed invention provide for a sturdy mechanical connection for pipes 12 and 14 of great and long lasting integrity, as stated on page 6, lines 18-21 of the instant patent application.

In view of the above comments and the amendments made to the claims, Applicants respectfully request that this rejection to the claims be withdrawn.

New Claim 25

New Claim 25 recites four threaded apertures 30 and carriers 32 being positioned as opposed pair with the axes of a pair being coaxially arranged and wherein the central axis of each aperture lies in a common plane that is perpendicular to the longitudinal and central axis of the first pipe member 14. These features are shown in the lower portion of Figure 1 of the instant application. Support for the recitations of new claim 25 appears in lines 5-9 of page 6 of the instant application.

Applicants wish to emphasize that the claimed invention of claim 14 generally may require a total of four aperture-carrier assemblies around the periphery of the pipe assembly comprising pipes 12 and 14 for adequately securing pipes 12 and 14 together whereas in Reimert many connectors are required as shown in Figure 2 of Reimert.

Claim 25 is believed to be patentable over the prior art.

Conclusion

In view of the above amendments and remarks, Applicants respectfully submit that claims 14, 17, 20 and 22-25 are in condition for allowance. Claim 14 contains patentable features not found in the prior art. Dependent claims 17 and 20 and 22-25 add further limitations to claim 14. Since these claims 17, 20 and 22-25 depend from a claim believed to be in condition for allowance, these claims are also believed to be in condition for allowance.

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Applicants respectfully submit that no new issues exist with the amendments made to the claims.

A Notice of Allowance is respectfully requested at an early date.

Respectfully submitted,


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SK/lcl
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Enclosures: Supplemental IDS and references